

**REMARKS**

In the non-final Office Action, the Examiner objects to the drawings as failing to not comply with 37 C.F.R. §1.84(p)(5); objects to claim 38 because claim 17 and claim 38 are identical; rejects claims 1, 3-10, 12-17 and 22-40 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement; rejects claims 1, 3-4, 8, 16-17, 22-26 and 36-40 under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. (U.S. Patent No. 6,721,371) in view of ENGLISH (U.S. Patent No. 5,489,879); rejects claims 5-7, 13, 27-29 and 33 under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH, and further in view of QUIGLEY et al. (U.S. Patent No. 6,650,624); rejects claims 14-15 and 34-35 under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH, and further in view of PEYROVIAN (U.S. Patent No. 5,768,682); and rejects claims 9-10, 12 and 30-32 under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH, further in view of QUIGLEY et al., and further in view of the applicant's admitted prior art in FIG. 17(A).

By way of this Amendment, portions of the specification and drawings, and claims 1, 3-5, 8, 16, 22-27, and 36-38 have been amended to improve form. Claims 1, 3-10, 12-17, and 22-40 remain pending in the present application. Reconsideration and timely allowance of all claims in view of the preceding amendments and the following remarks are respectfully requested.

**Drawing Objections**

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5). More specifically, the Examiner indicates that the drawings include various reference

characters that are not mentioned in the written description. To address this objection, Applicant has amended portions of the specification and drawings as described. More specifically, the attached Replacement Sheets remove various unused reference characters and insert or replace others of the reference characters to correspond with reference characters recited into the specification by way of the above amendment. In view of the foregoing amendments, reconsideration and withdrawal of the objection to the drawings are respectfully requested.

**Claim Objections**

Claim 38 is objected to because claim 17 and claim 38 are identical. Claim 38 has been amended to now depend from claim 37. Accordingly, reconsideration and withdrawal of the objection to claim 38 are respectfully requested.

**Rejections Under 35 U.S.C. § 112**

Claims 1, 3-10, 12-17 and 22-40 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. More specifically, the Examiner indicates that all pending claims include subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant respectfully traverses this rejection.

Applicant respectfully submits that claims 1, 3-10, 12-17 and 22-40 are fully supported and enabled by way of the present specification. In the interest of clarifying this support, applicants provide below a recitation of where support may be found in the specification for each of the independent claims 1 and 24. Should the Examiner feel that

similar recitations of support are necessary for any and/or all dependent claims, such a recitation will be provided in a subsequent response.

Independent claim 1, as amended, recites a method of a method for provisioning multiple digital receivers, including providing an analog to digital converter (**e.g., ADC 930 of Fig. 9**) having an analog input (**e.g., input line to ADC 930 in Fig. 9**) and a digital output (**e.g., output line from ADC 930 to data receiver bank 810 of Fig. 9 and “digitized upstream spectrum” in Fig. 10**); providing a plurality of digital receivers (**e.g., digital receivers 910 in Fig. 9 and 10**), each receiver having a programmable center frequency (**e.g., pg. 14, lines 8-13**), where the plurality of digital receivers are configured to receive digitized samples from the analog to digital converter (**e.g., “digitized upstream spectrum” in Fig. 10**) and where each of the plurality of digital receivers includes a low-pass digital filter (**e.g., digital filter 1010 of Fig. 10**); maintaining pre-computed sets of filter coefficients in non-volatile storage, each set corresponding to one of the plurality of low-pass digital filters, each filter having one of a predetermined set of bandwidths (**e.g., D.C. Coefficient storage 940 in Fig. 9; pg. 11, lines 10-12; pg. 13, lines 3-8**); receiving a request to provision a selected one of the plurality of digital receivers (**block 1305 in Fig. 13**); selecting a first center frequency and first bandpass bandwidth for provisioning the selected one of the plurality of digital receivers (**e.g., block 1310 in Fig. 13**); retrieving the filter coefficients associated with the first bandpass bandwidth (**e.g., block 1315 of Fig. 13; pg. 13, lines 19-22**); subjecting the retrieved filter coefficients to a bandpass transformation corresponding to the first center frequency (**e.g., block 1320 of Fig. 13, pg. 14, lines 2-4**); and loading the

transformed filter coefficients into coefficient latches in the selected one of the plurality of digital receivers (e.g., **block 1325 of Fig. 13; pg. 14, lines 4-6**).

Independent claim 24, recites a system for provisioning multiple digital receivers, including an analog to digital converter (e.g., **ADC 930 of Fig. 9**) having an analog input (e.g., **input line to ADC 930 in Fig. 9**) and a digital output (e.g., **output line from ADC 930 to data receiver bank 810 of Fig. 9** and **“digitized upstream spectrum” in Fig. 10**); a plurality of digital receivers (e.g., **digital receivers 910 in Fig. 9 and 10**), each of the plurality of digital receivers having a programmable center frequency (e.g., **pg. 14, lines 8-13**), and each of the plurality of digital receivers including a low-pass digital filter (e.g., **digital filter 1010 of Fig. 10**); means for coupling digitized samples to the plurality of digital receivers (e.g., **“digitized upstream spectrum” in Fig. 10**); means for maintaining pre-computed sets of filter coefficients in non-volatile storage, each set corresponding to one of plurality of low-pass digital filters, each filter having one of a predetermined set of bandwidths (e.g., **D.C. Coefficient storage 940 in Fig. 9; pg. 11, lines 10-12; pg. 13, lines 3-8**); means for receiving a request to provision a selected one of the plurality of digital receivers (**block 1305 in Fig. 13**); means for selecting a first center frequency and first bandpass bandwidth for provisioning the selected one of the plurality of digital receivers (e.g., **block 1310 in Fig. 13**); means for retrieving the filter coefficients associated with the first bandpass bandwidth (e.g., **block 1315 of Fig. 13; pg. 13, lines 19-22**); means for subjecting the retrieved filter coefficients to a bandpass transformation corresponding to the first center frequency (e.g., **block 1320 of Fig. 13, pg. 14, lines 2-4**); and means for loading the transformed filter coefficients into

coefficient latches in the selected one of the plurality of digital receivers (**e.g., block 1325 of Fig. 13; pg. 14, lines 4-6**).

In view of the above remarks, Applicant respectfully submits that all pending claims 1, 3-10, 12-17, and 22-40 are fully described and enabled by the present specification, as required by 35 U.S.C. §112, first paragraph. That is, based on the portions of the written description noted above, as well as the rest of the disclosure, one of ordinary skill in the art would be able to make and use the claimed invention. Reconsideration and withdrawal of the pending rejection under 35 U.S.C. §112, first paragraph are respectfully requested.

**Rejections Under 35 U.S.C. § 103(a) in view of BARHAM et al. and ENGLISH**

Claims 1, 3, 4, 8, 16, 17, 22-26 and 36-40 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH. Applicant respectfully traverses this rejection.

A proper rejection under 35 U.S.C. § 103 requires that three basic criteria be met. First, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest each and every claim limitation. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not the applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The combination of BARHAM et al. and ENGLISH

does not disclose or reasonably suggest the combination of features recited in Applicant's claims 1, 3, 4, 8, 16, 17, 22-26 and 36-40.

Claim 1, as amended, recites a method for provisioning multiple digital receivers, including providing an analog to digital converter having an analog input and a digital output; providing a plurality of digital receivers, each receiver having a programmable center frequency, where the plurality of digital receivers are configured to receive digitized samples from the analog to digital converter and where each of the plurality of digital receivers includes a low-pass digital filter; maintaining pre-computed sets of filter coefficients in non-volatile storage, each set corresponding to one of the plurality of low-pass digital filters, each filter having one of a predetermined set of bandwidths; receiving a request to provision a selected one of the plurality of digital receivers; selecting a first center frequency and first bandpass bandwidth for provisioning the selected one of the plurality of digital receivers; retrieving the filter coefficients associated with the first bandpass bandwidth; subjecting the retrieved filter coefficients to a bandpass transformation corresponding to the first center frequency; and loading the transformed filter coefficients into coefficient latches in the selected one of the plurality of digital receivers.

BARHAM et al. and ENGLISH, whether taken alone or in any reasonable combination, do not disclose or suggest the combination of features recited in amended claim 1.

For example, BARHAM et al. and ENGLISH, whether taken alone or in any reasonable combination, do not disclose or reasonably suggest maintaining pre-computed sets of filter coefficients in non-volatile storage, each set corresponding to one of the

plurality of low-pass digital filters, each filter having one of a predetermined set of bandwidths, as recited in amended claim 1. In making the rejection, the Examiner acknowledges that BARHAM et al. does not disclose this feature and relies on the coefficient register 44 of Fig. 2, and col. 3, lines 47-50 of ENGLISH as allegedly disclosing this feature (Office Action – pg. 6). Applicant respectfully disagrees with the Examiner's interpretation of ENGLISH.

At col. 3, lines 47-50, ENGLISH discloses:

More particularly, FIR filter 40 includes a coefficient register 44 holding a set of FIR coefficients calculated to establish a desired shape and center frequency in the subcarrier signal 32.

This section of ENGLISH discloses that a FIR filter may include a coefficient register for maintaining a set of FIR coefficients calculated to establish a desired shape and center frequency in a resulting signal. This section of ENGLISH, contrary to the Examiner's allegations, does not disclose or suggest maintaining pre-computed sets of filter coefficients in non-volatile storage, each set corresponding to one of the plurality of low-pass digital filters, each filter having one of a predetermined set of bandwidths, as recited in amended claim 1. Rather, ENGLISH clearly discloses a single set of coefficients designed to result in a desired shape and center frequency. Nothing whatsoever in ENGLISH discloses or suggests multiple pre-configured sets of filter coefficients, where each set of coefficients corresponds to one of the plurality of low-pass digital filters and further, where each filter has one of a predetermined set of bandwidths.

On the contrary, the very concept behind ENGLISH teaches against this feature. The underlying concept of ENGLISH relates to isolating subcarriers from within a broadcast signal, such as paging data (ENGLISH, col. 1, lines 11-26). Further,

ENGLISH discloses maintaining in coefficient register, a pre-configured initial set of coefficients for an ideal center frequency. Test data passed through the filter is then used to calibrate new filter coefficients (ENGLISH, col. 4, lines 38-56). Consequently, there is absolutely no need or reason in ENGLISH for maintaining multiple pre-computed sets of filter coefficients in non-volatile storage, each set corresponding to one of the plurality of low-pass digital filters, each filter having one of a predetermined set of bandwidths, as required by amended claim 1.

For at least this reason, claim 1 is patentable over BARHAM et al. and ENGLISH.

In addition, BARHAM et al. and ENGLISH do not disclose or suggest subjecting the retrieved filter coefficients to a bandpass transformation corresponding to the first center frequency, as recited in amended claim 1. In rejecting claim 1, the Examiner acknowledges that BARHAM et al. does not disclose this feature and relies on the phrase “modifies FIR coefficients” in col. 4, lines 27-37 of ENGLISH for allegedly disclosing this feature (Office Action – pg. 6). Applicant respectfully disagrees.

Under the present invention, however, calibration device 34 accounts for frequency-dependent distortions occurring in a given subcarrier generator 30 during calibration thereof. In particular, calibration device 34 modifies the FIR coefficients register 44 to predistort preliminary subcarrier signal 42. Subsequent distortion introduced in the devices 50, 52, 54, and 56 actually improves the shape and center frequency of the subcarrier signal 32 produced, i.e., improves relative to the signal represented by the predistorted preliminary subcarrier signal 42.

This section of ENGLISH discloses that calibration device 34 modifies the FIR coefficients based on distortions resulting from test signals. This section does not disclose or even remotely suggest subjecting the retrieved filter coefficients to a bandpass transformation corresponding to the first center frequency, as recited in amended claim 1.



At best, this section of ENGLISH discloses modifying FIR coefficients. However, there is absolutely no basis for interpreting this disclosure to correspond to subjecting the retrieved filter coefficients to a bandpass transformation corresponding to the first center frequency, as required by amended claim 1.

For at least this additional reason, claim 1 is patentable over BARHAM et al. in view of ENGLISH. Reconsideration and allowance of claim 1 are respectfully requested.

Claims 3, 4, 8, 16, 17, 22, and 23 depend from claim 1 and are therefore patentable over BARHAM et al. and ENGLISH for at least the reasons set forth above with respect to claim 1. Moreover, these claims are patentable over BARHAM et al. and ENGLISH for reasons of their own.

For example, BARHAM et al. and ENGLISH do not disclose or suggest that the analog to digital converter, the plurality of digital receivers, and the non-volatile storage (for maintaining the pre-computed sets of filter coefficients) are implemented on a single integrated circuit, as recited in amended claim 8. In rejecting claim 8, the Examiner relies on col. 3, lines 53-55 of BARHAM et al. for allegedly disclosing this feature (Office Action – pg. 8). Applicant respectfully disagrees.

As an initial matter, Applicant is confused as to the basis for the Examiner's rejection. In rejecting claim 1 (from which claim 8 depends), the Examiner admits that BARHAM et al. does not disclose or suggest "a filter coefficients storage" (Office Action, pg. 6, line 4). Accordingly, it seems illogical that any portion of BARHAM et al. can then support a rejection of claim 8, which recites that the first converter, the receivers, and the non-volatile storage (for maintaining the pre-computed sets of filter coefficients) are implemented on a single integrated circuit. It would seem that, if

BARHAM et al. does not disclose non-volatile storage for maintaining the pre-computed sets of filter coefficients, then BARHAM et al. cannot reasonably be construed to disclose that the analog to digital converter, the plurality of digital receivers, and the non-volatile storage (for maintaining the pre-computed sets of filter coefficients) are implemented on a single integrated circuit. Clarification is requested if this ground of rejection is to be maintained.

Regardless, Col. 3, lines 53-55 of BARHAM et al. discloses a bank or array of IC demodulators 10, where one of the demodulators is designated as the master or first demodulator 10A. Contrary to the Examiner's allegations, this section of BARHAM et al. does not disclose or suggest that the analog to digital converter, the plurality of digital receivers, and the non-volatile storage (for maintaining the pre-computed sets of filter coefficients) are implemented on a single integrated circuit, as recited in amended claim 8. In fact, no disclosure of a non-volatile storage for maintaining the pre-computed sets of filter coefficients is provided in BARHAM et al. The disclosure of ENGLISH does not remedy this deficiency.

For at least this reason, claim 8 is patentable over BARHAM et al. and ENGLISH. Reconsideration and withdrawal of the rejection of claim 8 are respectfully requested.

Independent claim 24 recites features similar to (yet potentially different in scope from) claim 1. Accordingly, claim 24 is patentable over BARHAM et al. and ENGLISH for at least reasons similar to those set forth above with respect to claim 1. Reconsideration and allowance of claim 24 are therefore respectfully requested.

Claims 25, 26, and 36-40 depend from claim 24 and are, therefore, patentable over BARHAM et al. and ENGLISH for at least the reasons set forth above with respect to claim 24. Reconsideration and allowance of claims 25, 26, and 36-40 are therefore respectfully requested.

**Rejections Under 35 U.S.C. § 103(a) in view of BARHAM et al., ENGLISH, and QUIGLEY et al.**

Claims 5-7, 13, 27-29 and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH, and further in view of QUIGLEY et al. Applicant respectfully traverses this rejection.

Claims 5-7 and 13 depend from claim 1. Without acquiescing in the rejection of claims 5-7 and 13, Applicant respectfully submits that the disclosure of QUIGLEY et al. does not remedy the deficiencies in the disclosure of BARHAM et al. and ENGLISH set forth above with respect to claim 1. Therefore, Applicant submits that claims 5-7 and 13 are patentable over BARHAM et al., ENGLISH, and QUIGLEY et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1.

Claims 27-29 and 33 depend from claim 24. Without acquiescing in the rejection of claims 27-29 and 33, Applicant respectfully submits that the disclosure of QUIGLEY et al. does not remedy the deficiencies in the disclosure of BARHAM et al. and ENGLISH set forth above with respect to claim 24. Therefore, Applicant submits that claims 27-29 and 33 are patentable over BARHAM et al., ENGLISH, and QUIGLEY et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 24.

**Rejections Under 35 U.S.C. § 103(a) in view of BARHAM et al., ENGLISH,**

**QUIGLEY et al., and PEYROVIAN**

Claims 14, 15, 34, and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH, and further in view of PEYROVIAN. Applicant respectfully traverses this rejection.

As an initial matter, Applicants note that claim 14 and 15 depend from claim 5 and claims 34 and 35 depend from claim 27, both of currently stand rejected under BARHAM et al., ENGLISH, and QUIGLEY et al. Accordingly, Applicants presume that the rejection of claims 14, 15, 34, and 35 was intended to be based on the combination of BARHAM et al., ENGLISH, QUIGLEY et al., and PEYROVIAN. Clarification is respectfully requested, should this rejection be maintained.

Claims 14 and 15 depend from claim 5. Without acquiescing in the rejection of claims 14 and 15, Applicant respectfully submits that the disclosure of PEYROVIAN does not remedy the deficiencies in the disclosure of BARHAM et al., ENGLISH, and QUIGLEY et al. set forth above with respect to claim 5. Therefore, Applicant submits that claims 14 and 15 are patentable over BARHAM et al., ENGLISH, QUIGLEY et al. and PEYROVIAN, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 5.

Claims 34 and 35 depend from claim 27. Without acquiescing in the rejection of claims 5-7 and 13, Applicant respectfully submits that the disclosure of PEYROVIAN does not remedy the deficiencies in the disclosure of BARHAM et al., ENGLISH, and QUIGLEY et al. set forth above with respect to claim 27. Therefore, Applicant submits that claims 34 and 35 are patentable over BARHAM et al., ENGLISH, QUIGLEY et al.,

and PEYROVIAN, whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 27.

**Rejections Under 35 U.S.C. § 103(a) in view of BARHAM et al., ENGLISH, QUIGLEY et al., and Applicant's Allegedly Admitted Prior Art**

Claims 9-10, 12 and 30-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over BARHAM et al. in view of ENGLISH, further in view of QUIGLEY et al., and further in view of the applicant's admitted prior art in FIG. 17(A). Applicant respectfully traverses this rejection.

Claims 9, 10, and 12 depend from claim 5. Without acquiescing in the rejection of claims 9, 10, and 12, Applicant respectfully submits that Applicant's Fig. 17(A) does not remedy the deficiencies in the disclosure of BARHAM et al., ENGLISH, and QUIGLEY et al. set forth above with respect to claim 5. Therefore, Applicant submits that claims 9, 10, and 12 are patentable over BARHAM et al., ENGLISH, QUIGLEY et al. and Applicant's Fig. 17(A), whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 5.

Claims 30-32 depend from claim 27. Without acquiescing in the rejection of claims 30-32, Applicant respectfully submits that Applicant's Fig. 17(A) does not remedy the deficiencies in the disclosure of BARHAM et al., ENGLISH, and QUIGLEY et al. set forth above with respect to claim 27. Therefore, Applicant submits that claims 30-32 are patentable over BARHAM et al., ENGLISH, QUIGLEY et al., and Applicant's Fig. 17(A) whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 27.

**Conclusion**

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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